BONE PLATING SYSTEM

now U.S. Patent 6,623,486,

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Cross-Reference to Related Applications

This application is a continuation of U.S. Patent Application No. 09/660,287, filed on September 12, 2000, which claims the benefit under 35 U.S.C. § 119(e) of U.S. Provisional Application No. 60/153,239, filed on September 13, 1999.

Field of the Invention

The present invention is directed to a bone plating system for fracture fixation, and in particular to a system including a bone plate having plate holes for both locking and non-locking screws.

Background of the Invention

The clinical success of plate and screw systems for internal fixation of fractures is well-documented. However, treatment of certain fractures, such as peri-articular fractures, which require a fixed angular relationship between the bone plate and screws, remains problematic. Fixed angle devices for treatment of these fractures are available and include the Dynamic Condylar Screw System commercially available from Synthes (USA) of Paoli, PA and a wide variety of blade plates. All of these devices require a high level of surgical skill, suitable bone quantity and quality, and a fracture pattern compatible with the device.

In cases in which these requirements are not satisfied, e.g. severely comminuted bone or missing bone segments, conventional bone plate and screw systems must be used. Although these conventional systems are particularly well-suited to promoting healing of the fracture by compressing the fracture ends together and drawing the bone into close apposition with other fragments and the bone plate, the angular relationships between the plate and screws are not fixed and can change postoperatively. This can lead to mal-alignment and poor clinical results.

The primary mechanism for the change in angular relationship is related to energy storage. As previously noted, threading a bone screw into bone compresses the bone against the plate. The compression results in high strain in the bone, and, consequently, energy storage. With the dynamic loading resulting from physiological conditions, loosening of the plate and screw and loss of the stored energy can result.